Ham-Space Digest   Tue, 19 Apr 94   Volume 94 : Issue   98

Today's Topics:
                        ANS-106 Bulletins
                APT-Satellites: Report APR 16, 1994
                    Point me to the FAQ please...
                SAREX element set 4/14/94 at 0:40 UTC
                    SAREX Keps 4/14 at 0:40 UTC
                            satellite
        Satellite Receive Dishes Combined in Phase Array (2 msgs)
                        STS-59 mission extended
                STS-59 Orbital State Vector Rev #151
                STS-59 Orbital State Vectors Rev #89

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

SB SAT @ AMSAT $ANS-106.01
GARC LANDLINE BBS OPENS

HR AMSAT NEWS SERVICE BULLETIN 106.01 FROM AMSAT HQ
SILVER SPRING, MD APRIL 16, 1994
TO ALL RADIO AMATEURS BT
BID: $ANS-106.01

Goddard Amateur Radio Club (GARC) Landline BBS Operations Begin

The NASA Goddard Amateur Radio Club (GARC), Inc. in Greenbelt, MD has been
working behind the scenes on projects that may benefit all amateur
radio operators in general and perhaps AMSAT members in particular.

Ron Parise (WA4SIR) has been "beta" testing a Bulletin Board System (BBS)
which is accessible via the INTERNET through telnet and ftp (file transfer
protocol), a telephone modem, and packet radio (locally on 145.090 MHz and
non-locally through "packet wormholes"). With Ron's heavy STS-67 crew
training as of late, Jim Blackwell (N3KWU) is picking up much of the work
to complete the "beta" testing phase. The BBS contains keplerian orbital
elements updated daily, AMSAT bulletins, SAREX bulletins, club member mail
service, club announcements, space shuttle mission infor-mation and lots
more.

        Access via Internet: wa3nan.gsfc.nasa.gov or 128.183.105.17
                via landline: 301-286-4137
                via packet: WA3NAN on 145.090 MHz in Washington, DC area

Additionally, the Goddard Amateur Radio Club has a home page for public
viewing on the GARC World Wide Web server. It contains the latest GARC
Newsletter in electronic form, latest space shuttle keps, GARC calendar of
events, details of upcoming club activities, current WA3NAN QSL card, club
facility-repeater-BBS info, a morse code experiment and more.

        WWW access URL:
                http://macgwy-mac2.gsfc.nasa.gov/garc/wa3nan-home-page.html

The GARC Web server was developed and is maintained by club president Jim
Blackwell (N3KWU) (n3kwu@amsat.org). All radio amateurs are invited to
check out its potential. This medium is the hottest item on the INTERNET
today.

[The AMSAT News Service (ANS) would like to thank WD8LAQ for this bulletin
 item. WD8LAG can be reached at his INTERNET address of wd8laq@amsat.org.]

/EX
SB SAT @ AMSAT $ANS-106.02
AMSAT PBBS CHANGES FREQUENCY

HR AMSAT NEWS SERVICE BULLETIN 106.02 FROM AMSAT HQ
SILVER SPRING, MD APRIL 16, 1994
TO ALL RADIO AMATEURS BT
BID: $ANS-106.02

AMSAT PBBS Changing Frequency 15-APR-1994

The AMSAT PBBS will be changing frequency and modes starting 15-APR-1994
at 16:00 UTC. The AMSAT PBBS will be on a "Mark" freqeuncy of 14.079 MHz,
that is 14.181.1 MHz AFSK LSB using the mode Pactor with the callsign WT0N.
The new schedule will be as follows: Monday through Saturday from 16:00 UTC
until 23:00 UTC on a "Mark" frequency of 14.079 MHz. From 23:30 UTC until
04:00 UTC on a "Mark" freqeuncy of 7.073.5 MHz, that is 7.075.6 MHz AFSK
LSB, using the Mode Pactor. These changes have been made to better serve
AMSAT users with improved coverage and the use of a mode that many of the
users have expressed an interest in. If anyone would like to use the Mode
G-TOR, please let W0TN and he will see about setting up a schedule for
G-TOR users. Please send any comments or suggestions to one of the
following addresses:
                    INTERNET: BJARTS@STTHOMAS.EDU
                    PACKET: WT0N@WB0GDB.#STP.MN.USA.NOAM
                    PACTOR: WT0N

The AMSAT PBBS will have updated Keps and AMSAT BULLETINS, along with
SpaceNews and other satellite related items.

[The AMSAT News Service would like to thank B.J. Arts (WT0N) for this
 bulletin item.]

/EX
SB SAT @ AMSAT $ANS-106.03
AO-13 OPS NET SCHEDULE

HR AMSAT NEWS SERVICE BULLETIN 106.03 FROM AMSAT HQ
SILVER SPRING, MD APRIL 16, 1994
TO ALL RADIO AMATEURS BT
BID: $ANS-106.03

Current AMSAT Operations Net Schedule For AO-13

AMSAT Operations Nets are planned for the following times. Mode-B Nets
are conducted on AO-13 on a downlink frequency of 145.950 MHz. If, at
the start of the OPS Net, the frequency of 145.950 MHz is being used
for a QSO, OPS Net enthusiasts are asked to move to the alternate
frequency of 145.955 MHz.

Date	UTC	Mode	Phs	NCS	Alt NCS
18-Apr-94	0100	B	188	W5IU	WA5ZIB
23-Apr-94	1800	B	180	VE2LVC	W9ODI
30-Apr-94	2130	B	176	W9ODI	VE2LVC
09-May-94	0000	B	175	W5IU	WA5ZIB
14-May-94	1700	B	167	WA5ZIB	W5IU
21-May-94	2130	B	185	VE2LVC	W9ODI

Any stations with information on current events would be most welcomed.
Also, those interested in discussing technical issues or who have
questions about any particular aspect of OSCAR statellite operations,
are encouraged to join the OPS Nets. If neither of the Net Control
Stations show up, any participant is invited to act as the NCS.

Slow Scanners are invited to join the SSTV sessions on AO-13. The freq-
uency is 145.955 MHz. The net meets at 45 minutes before Mode S, and on
Mode B following Mode S on Saturdays and Sundays. Join those sessions or
convey your wishes for other SSTV skeds to wb6llo@amsat.org, and he will
coordinate your efforts.

/EX
SB SAT @ AMSAT $ANS-106.04
WEEKLY OSCAR STATUS REPORTS

HR AMSAT NEWS SERVICE BULLETIN 106.04 FROM AMSAT HQ
SILVER SPRING, MD APRIL 16, 1994
TO ALL RADIO AMATEURS BT
BID: $ANS-106.04

Weekly OSCAR Status Reports: 16-APR-94

AO-13: Current Transponder Operating Schedule:
M QST *** AO-13 TRANSPONDER SCHEDULE *** 1994 Apr 07-Jul 11
Mode-B : MA   0 to MA 170 |
Mode-BS : MA 170 to MA 218 |
Mode-S : MA 218 to MA 220 |<- S beacon only
Mode-S : MA 220 to MA 230 |<- S transponder; B trsp. is OFF
Mode-BS : MA 230 to MA 250 | Blon/Blat 230/-5
Mode-B : MA 250 to MA 256 |
Omnis   : MA 250 to MA 120 | Move to attitude 180/0, Jul 11
[G3RUH/DB2OS/VK5AGR]

FO-20: The following is the current schedule for transponder operations:
       ANALOG MODE:
     20-Apr-94 7:35 -to- 27-Apr-94 7:55 UTC
     11-May-94 6:54 -to- 18-May-94 7:20 UTC
  Digital mode: Unless otherwise noted above.
  [Kazu Sakamoto (JJ1WTK) qga02014@niftyserve.or.jp]

STS-59: To obtain a QSL, either as a result of a SWL or for a QSL, send
your report or QSL to ARRL EAD, STS-59 QSL, 225 Main Street, Newington, CT
06111, USA. Include the following information in your QSL or report:
STS-59, date, time in UTC, frequency and mode (FM voice or packet). In
addit-ion, you must also include an SASE (or sufficient IRCs) using a
large, business-sized envelope if you wish to receive a card. The Orange
Park Amateur Radio Club in Florida has generously volunteered to manage the

cards for this mission. [Bob Inderbitzen (NQ1R) Assistant to the Manager, ARRL Educational Activities]

KO-23: Working well and has a new pair of images. [WH6I]

KO-25: Working well. A number of new images can be found on KO-25 but since the wide angle images are in a new format that so far has not been decoded, and since narrow angle images are very hard to locate in the absence of the companion wide angle image there is very little to get out of the images that are available. [WH6I]

AO-16: Working well. WH6I notes that usage on the 1200 baud OSCARS has has dropped off considerably. [WH6I]

LO-19: Working well. [WH6I]

The AMSAT NEWS Service (ANS) is looking for volunteers to contribute weekly OSCAR status reports. If you have a favorite OSCAR which you work on a regular basis and would like to contribute to this bulletin, please send your observations to WD0HHU at his CompuServe address of 70524,2272, on INTERNET at wd0hhu@amsat.org, or to his local packet BBS in the Denver, CO area, WD0HHU @ W0LJF.#NECO.CO.USA.NOAM. Also, if you find that the current set of orbital elements are not generating the correct AOS/LOS times at your QTH, PLEASE INCLUDE THAT INFORMATION AS WELL. The information you provide will be of value to all OSCAR enthusiasts.

/EX

Date: Mon, 18 Apr 1994 15:09:27 GMT
From: yale.edu!nigel.msen.com!zib-berlin.de!uni-paderborn.de!
urmel.informatik.rwth-aachen.de!gmd.de!NewsWatcher!user@yale.arpa
Subject: APT-Satellites: Report APR 16, 1994
To: ham-space@ucsd.edu

Observed at station 50.7 NLat, 7.1 ELon, APR 16, 1994

NOAA-9:   APT 137.62 On
NOAA-10:   APT 137.50 *OFF*
NOAA-11:   APT 137.62 On
NOAA-12:   APT 137.50 On
Meteor 3-5: APT 137.85 On

NOAA-10 is near NOAA-12. Thus NOAA-10 APT is OFF to avoid interference caused by two visible transmitters using the same frequency. (VHF-conflict)

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+-------------------------------------------+
|Peter Henne (peter.henne@gmd.de)           |
|            (henne@gmd.de)                  |
|German Nat.Research Center.f.Comp.Science   |
|D-53754 St.AUGUSTIN, Germany               |
+-------------------------------------------+
```

Date: 19 Apr 1994 01:56:57 GMT
From: ncar!hsdndev!dartvax.dartmouth.edu!usenet@ames.arpa
Subject: Point me to the FAQ please...
To: ham-space@ucsd.edu

        Can someone point me to the FAQ for amateur satellites? I don't
seem to see it here or in rec.radio.info. I figure it is the best
place to start.
        Also, if anyone knows of other net or hard copy resources that
could get
someone interested in getting into low power/low expense casual
satellite activity (who is currently fairly clueless about it all), I
would be very interested.
        Thanks in advance...

===
Kenneth E. Harker N1PVB   Dartmouth College   Amateur Packet Radio
kenneth.e.harker@dartmouth.edu   Hinman Box 1262   n1pvb@w1et.nh.usa.na
(603) 643-5716   Hanover, NH 03755   or n1pvb-5 on 144.99
===
            (PGP Public Key now available on request)

Date: 15 Apr 94 02:27:20 GMT
From: agate!howland.reston.ans.net!cs.utexas.edu!swrinde!ihnp4.ucsd.edu!
library.ucla.edu!news.ucdavis.edu!csus.edu!netcom.com!marcbg@ucbvax.berkeley.edu
Subject: SAREX element set 4/14/94 at 0:40 UTC
To: ham-space@ucsd.edu

Greenbelt, MD, 4/14/94 at 0:40 UTC

The official SAREX element set at this time is GSFC-016. This element set
was generated by Ron Parise, WA4SIR, of the Goddard Space Flight Center.
Gil Carman, WA5NOM, reports that the predictions using GSFC-016 were 6
seconds earlier than GSFC-014 as of 15:00 UTC on 4/13.

STS-59
1 23042U 94020A   94103.28423883 0.00019321 11073-4 10308-4 0   169

```
2 23042  56.9943 245.4685 0009256 288.8199  71.1887 16.21374060   631
```

Satellite: STS-59
Catalog number: 23042
Epoch time: 94103.28423883   (13 APR 94   06:49:18.24 UTC)
Element set: GSFC-016
Inclination: 56.9943 deg
RA of node: 245.4685 deg   Space Shuttle Flight STS-59
Eccentricity: 0.0009256   Keplerian Elements
Arg of perigee: 288.8199 deg
Mean anomaly: 71.1887 deg
Mean motion: 16.21374060 rev/day   Semi-major Axis: 6593.9561 Km
Decay rate: 0.19E-03 rev/day*2 Apogee Alt: 221.67 Km
Epoch rev: 63   Perigee Alt: 209.46 Km

NOTE:
This element set is based on NORAD element set # 016.
The spacecraft has been propagated to the next ascending
node, and the orbit number has been adjusted to bring it
into agreement with the NASA numbering convention.

Submitted by Frank H. Bauer, KA3HDO for the SAREX Working Group
--
Marc Grant   Voice Mail: 214-246-1150
home: marcbg@netcom.com   work: marcbg@esy.com   Amateur Radio N5MEI

Date: 14 Apr 94 00:52:52 GMT
From: agate!howland.reston.ans.net!gatech!newsxfer.itd.umich.edu!nntp.cs.ubc.ca!
alberta!ve6mgs!usenet@ucbvax.berkeley.edu
Subject: SAREX Keps 4/14 at 0:40 UTC
To: ham-space@ucsd.edu

SB SAREX @ AMSAT $STS-59.017
SAREX Keps 4/14 at 0:40 UTC

Greenbelt, MD, 4/14/94 at 0:40 UTC

The official SAREX element set at this time is GSFC-016. This element set
was generated by Ron Parise, WA4SIR, of the Goddard Space Flight Center.
Gil Carman, WA5NOM, reports that the predictions using GSFC-016 were 6
seconds earlier than GSFC-014 as of 15:00 UTC on 4/13.

 STS-59
 1 23042U 94020A   94103.28423883 0.00019321 11073-4 10308-4 0   169
 2 23042 56.9943 245.4685 0009256 288.8199 71.1887 16.21374060   631
```

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   Satellite: STS-59
   Catalog number: 23042
   Epoch time:        94103.28423883         (13 APR 94   06:49:18.24 UTC)
   Element set:      GSFC-016
   Inclination:       56.9943 deg
   RA of node:       245.4685 deg           Space Shuttle Flight STS-59
   Eccentricity:    0.0009256                   Keplerian Elements
   Arg of perigee:   288.8199 deg
   Mean anomaly:      71.1887 deg
   Mean motion:    16.21374060 rev/day      Semi-major Axis: 6593.9561 Km
   Decay rate:        0.19E-03 rev/day*2    Apogee  Alt:         221.67 Km
   Epoch rev:               63              Perigee Alt:         209.46 Km


   NOTE - This element set is based on NORAD element set # 016.
          The spacecraft has been propagated to the next ascending
          node, and the orbit number has been adjusted to bring it
          into agreement with the NASA numbering convention.

Submitted by Frank H. Bauer, KA3HDO for the SAREX Working Group

/EX

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Date: 18 Apr 94 22:56:29 GMT
From: agate!cat.cis.Brown.EDU!noc.near.net!news.delphi.com!
serapions@ucbvax.berkeley.edu
Subject: satellite
To: ham-space@ucsd.edu

Hello,
     My name is Paul and recently I have been reading a great book about
satellites.  The following is information that was covered in the first
chapters.

     A magnetic torquer is basically a rod with a coil wrapped around it.
 The direction of current into the coil can be changed.  Torquers are used
to counteract the earths magnetic field, as well as residual forces of the
spacecraft.  A magnetic dipole moment is produced when the coil is
energized, defined as:
     dipole moment =   pole strength  X  distance between poles

     A nutation damper is a tube partially filled with mercury and mounted
on the spacecraft deck.  It is a viscous damper, which damps out "nutation",
( a "wobbly axis").
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During the Hubble telescope repair, we heard a lot about Magnetometers.
These are devices which measure the strength of a magnetic field, and also
its direction. In its simplist form it is a solenoid coil with a
ferromagnetic core. As it passes through the earths magnetic field a
proportional output curreroduced.

Tracking refers to following, and plotting the path of an object.
Telemetry, refers to the process of obtaining samples of data from various
sensors and then transmitting the data to an earth station. The data from
the sensors is first encoded and then modulated onto an RF carrier. The
modulated carrier is transmitted to earth. A sensor measures some parameter
such as radiation, temperature, pressure, or speed (RPM), and changes it into
an electrical signal, which can be processed by a computer. Time division
multiplexing or frequency division multiplexing are used to place all of the
"telemetry data" on a single carrier.
        Does anyone know the bandwidth requirement for telemetry (esp. PCM)?
        Please leave a reply or contact "Paul" via Internet, my address is:
                                        Serapions@delphi.com

Date: Mon, 18 Apr 1994 14:25:17 GMT
From: ihnp4.ucsd.edu!swrinde!sgiblab!darwin.sura.net!fconvx.ncifcrf.gov!
mack@network.ucsd.edu
Subject: Satellite Receive Dishes Combined in Phase Array
To: ham-space@ucsd.edu

In article <2osk75INN7mv@uwm.edu> weening@convex.csd.uwm.edu (Richard W Weening)
writes:
>
>Is anyone aware of successful methods for combining two or more satellite receive
dishes
>in phase array as a means of achieving receive gain comparable to a single
>larger dish? Is there a Usenet Group concerned with the engineering aspects
>of satellite broadcasting and receive technology? Thanks

        COmbinng antennas into arrays is covered in most texts on antennas. You
will have to do it at receive frequency and feed the power to a combiner. The
pointing accuracy needed will be approx that for an antenna with the diam=
spacing between the two dishes (ie you'll need to be very accurate), while
the signal will only go up 3bd. This is great for radia astronomy where you
want to know exactly where your source is. However you just want more
signal, in which case it will be easier to buy a bigger dish.

        Joe Mack NA3T
        mack@ncifcrf.gov

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Date: Mon, 18 Apr 1994 12:56:06 GMT
From: galaxy.ucr.edu!library.ucla.edu!europa.eng.gtefsd.com!news.umbc.edu!eff!
news.kei.com!yeshua.marcam.com!zip.eecs.umich.edu!newsxfer.itd.umich.edu!
news1.oakland.edu!rcsuna@ihnp4.ucsd.edu
Subject: Satellite Receive Dishes Combined in Phase Array
To: ham-space@ucsd.edu

In <2osk75INN7mv@uwm.edu>, weening@convex.csd.uwm.edu (Richard W Weening) writes:
>
>Is anyone aware of successful methods for combining two or more satellite receive
dishes
>in phase array as a means of achieving receive gain comparable to a single
>larger dish?   ^^^^

I've always seen phased antenna arrays used for more precise pointing, not
for increased gain. Of course, with a narrower "beam" you GET more gain,
so maybe it isn't as unusual an idea as it first seemed....

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Alan Anderson (Wb9RUF) [no fancy .sig -- yet]

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Date: Mon, 18 Apr 1994 12:49:40 GMT
From: netcomsv!netcom.com!marcbg@decwrl.dec.com
Subject: STS-59 mission extended
To: ham-space@ucsd.edu

Greenbelt, MD, 4/17/94 at 15:40 UTC

The STS-59 mission has been extended by one day. Landing is now set for
15:53 UTC on Tuesday April 19. This extension day provides an additional
day of SAREX operations for those interested in making a SAREX contact.

The official SAREX element set for today is still JSC-021. This element
set was generated by Gil Carman, WA5NOM, of the Johnson Space Flight Center.

STS-59
1 23042U 94020A   94105.62622017 .00203357 11079-4 10947-3 0   213
2 23042 56.9933 234.1397 0007233 279.9940 80.0358 16.22652200 1014

Satellite: STS-59
Catalog number: 23042
Epoch time: 94105.62622017   = (15 APR 94   15:01:45.42 UTC)
Element set: 021
Inclination: 56.9933 deg

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RA of node:         234.1397 deg         Space Shuttle Flight STS-59
Eccentricity:       .0007233             Keplerian Element set JSC-021
Arg of perigee:     279.9940 deg         from NASA flight Day  7 vector
Mean anomaly:        80.0358 deg
Mean motion:     16.22652200 rev/day          G. L. Carman
Decay rate:      2.03357e-03 rev/day^2    NASA Johnson Space Center
Epoch rev:              101
Checksum:               271

Submitted by Frank H. Bauer, KA3HDO for the SAREX Working Group
--
Marc Grant                                  Voice Mail: 214-246-1150
home: marcbg@netcom.com     work: marcbg@esy.com      Amateur Radio N5MEI


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Date: Mon, 18 Apr 1994 21:52:48 GMT
From: ihnp4.ucsd.edu!galaxy.ucr.edu!library.ucla.edu!csulb.edu!csus.edu!
netcom.com!astroman@network.ucsd.edu
Subject: STS-59 Orbital State Vector Rev #151
To: ham-space@ucsd.edu


Vector format = 117
Satellite Name:         STS-59
Catalog Number:         23042  94020A
Epoch Date/Time:        94108.75165878472
                        04/18/1994  18:02:23.319 UTC
EFG E:                    11352359.29 ft
    F:                     3215735.26 ft
    G:                   -18105476.33 ft
    Edot:                   -5497.5132 ft/s
    Fdot:                   24012.4114 ft/s
    Gdot:                     827.8732 ft/s
ndot/2 (drag):          0.00250000000 rev/day^2
nddt/6:                   1.11000E-05 rev/day^3
Bstar:                    8.99829E-05 1/Earth Radii
Elset #:                           31
Rev @ Epoch:            151.75621515941

MSDOS/PC software is available for conversion of
OSV to 2 Line Keplerian Elements via ftp to:
oak.oakland.edu:/pub/msdos/hamradio/v2l9331.zip
and the SIMTEL archives.


State Vectors courtesy Ken Ernandes N2WWD


SM
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Date: 15 Apr 94 02:40:39 GMT
From: agate!howland.reston.ans.net!europa.eng.gtefsd.com!library.ucla.edu!
news.ucdavis.edu!csus.edu!netcom.com!astroman@ucbvax.berkeley.edu
Subject: STS-59 Orbital State Vectors Rev #89
To: ham-space@ucsd.edu

Vector format = 1017
Satellite Name:          STS-59
Catalog Number:          23042  94020A
Epoch Date/Time:         94104.89669105324
                         04/14/1994  21:31:14.106 UTC
ECI X:                     2019155.471079 ft
M50 Y:                    -15215137.202542 ft
    Z:                     15222360.072138 ft
    Xdot:                     18017.01562 ft/s
    Ydot:                     13922.94141 ft/s
    Zdot:                     11514.48438 ft/s
ndot/2 (drag):              0.01482654578 rev/day^2
nddt/6:                     0.00000E+00 rev/day^3
Bstar:                      6.11363E-04 1/Earth Radii
Elset #:                             19
Rev @ Epoch:             89.15892374393

MSDOS/PC software is available for conversion of
OSV to 2 Line Keplerian Elements via ftp to:
oak.oakland.edu:/pub/msdos/hamradio/v2l9331.zip
and the SIMTEL archives.

State Vectors courtesy Ken Ernandes N2WWD

SM

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Date: 18 Apr 94 16:47:13 GMT
From: telesoft!garym@uunet.uu.net
To: ham-space@ucsd.edu

References <STS-59.94098.748@alsys.com>, <STS-59.94103.469@alsys.com>,
<STS-59.94105.626@alsys.com>
Reply-To : elements-request@alsys.com
Subject : STS-59 Element Set (94108.643)

STS-59
1 23042U 94020A   94108.64356620  .00203357  11079-4  10947-3 0   223
2 23042  56.9938 219.5250 0008385 295.2758  64.7483 16.24015035  1504
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Satellite: STS-59
Catalog number: 23042
Epoch time:       94108.64356620   =     (18 APR 94   15:26:44.11 UTC)
Element set:      022
Inclination:        56.9938 deg
RA of node:        219.5250 deg          Space Shuttle Flight STS-59
Eccentricity:       .0008385             Keplerian Element set JSC-022
Arg of perigee:    295.2758 deg          from NASA flight Day 10 vector
Mean anomaly:       64.7483 deg
Mean motion:    16.24015035 rev/day            G. L. Carman
Decay rate:     2.03357e-03 rev/day^2     NASA Johnson Space Center
Epoch rev:             150

(for Shuttle Elements subscription info, email: listserv@alsys.com)

--
Gary Morris          Internet: elements-request@alsys.com
KK6YB                Packet:   KK6YB @ N0ARY.#NOCAL.CA.USA.NA
San Diego, CA, USA   Phone:    +1 619-457-2700 x128

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End of Ham-Space Digest V94 #98
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